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SmartCare Project and FVG deployment site

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Local Health Authority of Trieste - ASUITs

REGIONE AUTONOMA FRIULI VENEZIA GIULIA
Azienda Sanitaria Universitaria Integrata di Trieste

REGIONE AUTONOMA FRIULI VENEZIA GIULIA

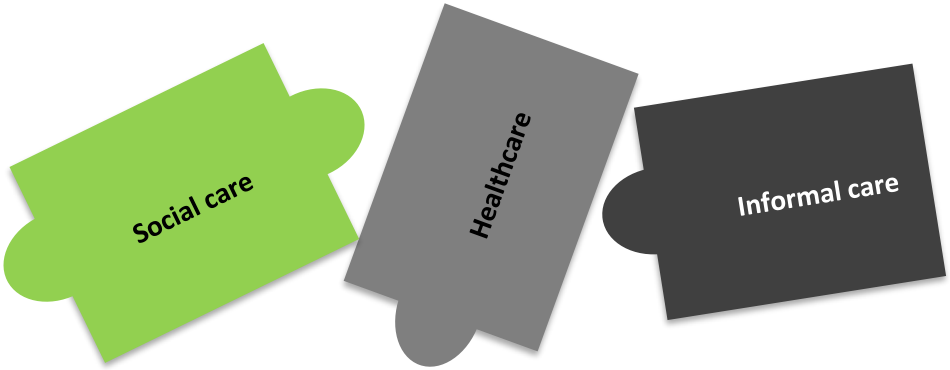
Where SmartCare idea comes from: background

- National welfare & health systems and regional/local support practices are developing more and more **specialization** and clear **boundaries** closed them to cooperation

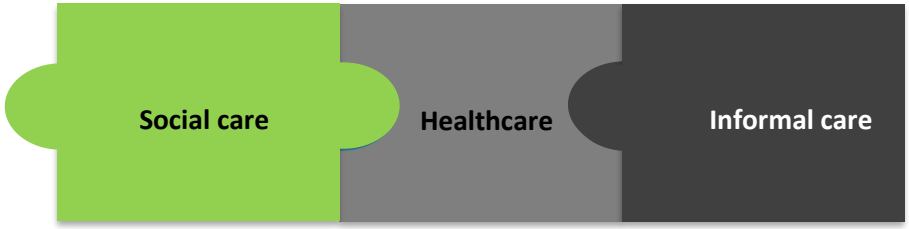
- Today's reality is characterized by **fragmentation** and **bureaucracy** in current provision systems resulting in disjointed and patchy support services

- Leading to **inefficiencies**, duplication of resources, and potentially to reduced levels of quality of care

Today



Tomorrow



Formal side of SmartCare

- ***Funding programme***:
  Competitiveness and Innovation Programme (CIP)
  Information Communication Technology Policy Support (ICT-PSP) sub-programme

- ***Funding instrument***:
  Pilot type A
  (main beneficiaries are regional governmental bodies)

- ***Starting date:***
  1st March 2013 (till 31st August 2016)

SmartCare Project

SmartCare is a 3-year project, with 9 deployment sites and 42 total partners with a twofold goal:

- To **enhance integrated, ICT-based health and social care** through the usage of new technologies for telehealth and telemonitoring.
- To **promote domiciliary care and citizen's empowerment.** People with complex HC and SC needs will receive integrated home assistance by the **Regional Healthcare system together with Social Services (Municipalities) and with the support of the Third Sector and of formal and informal carers.**
- The Local Health Authority of Trieste (ASUITs) is the lead partner

SmartCare: from usual care to integrated care

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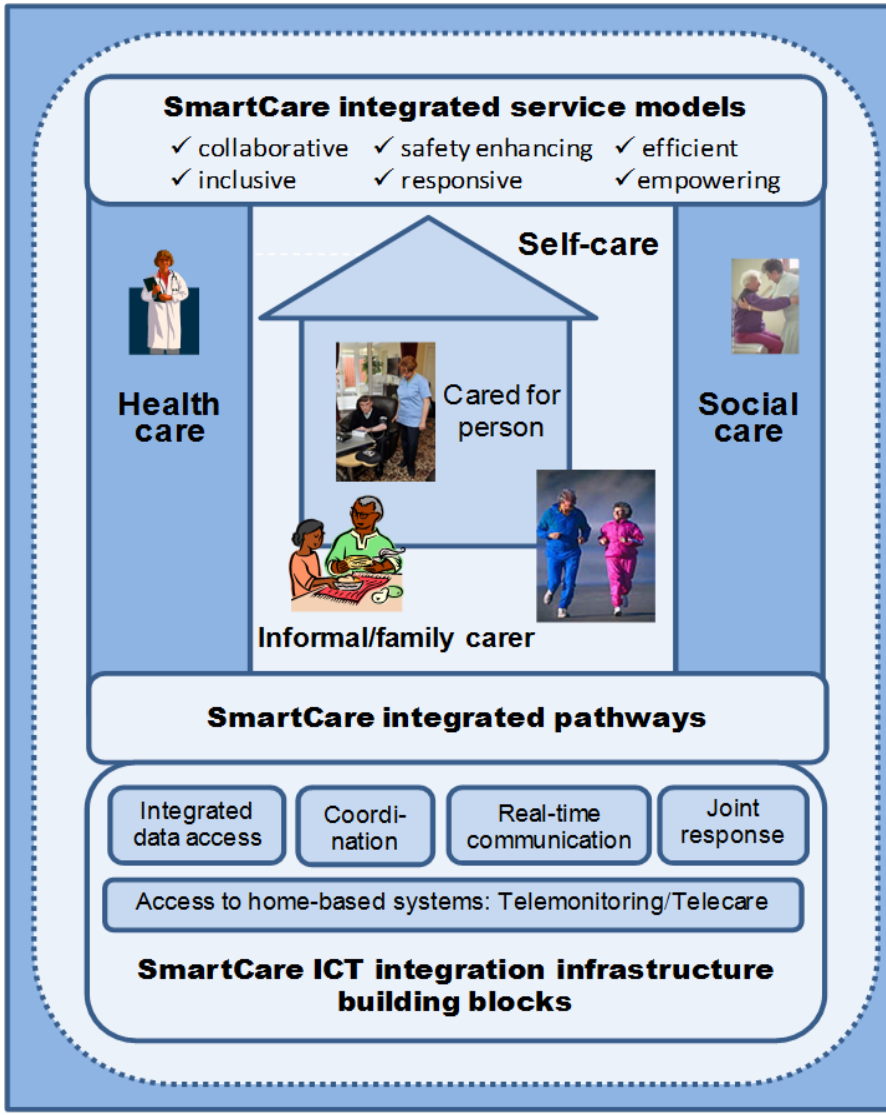
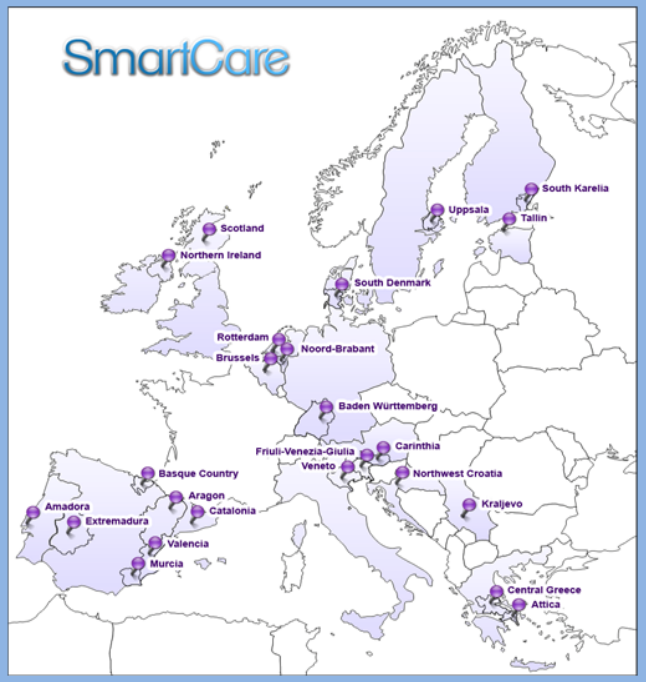
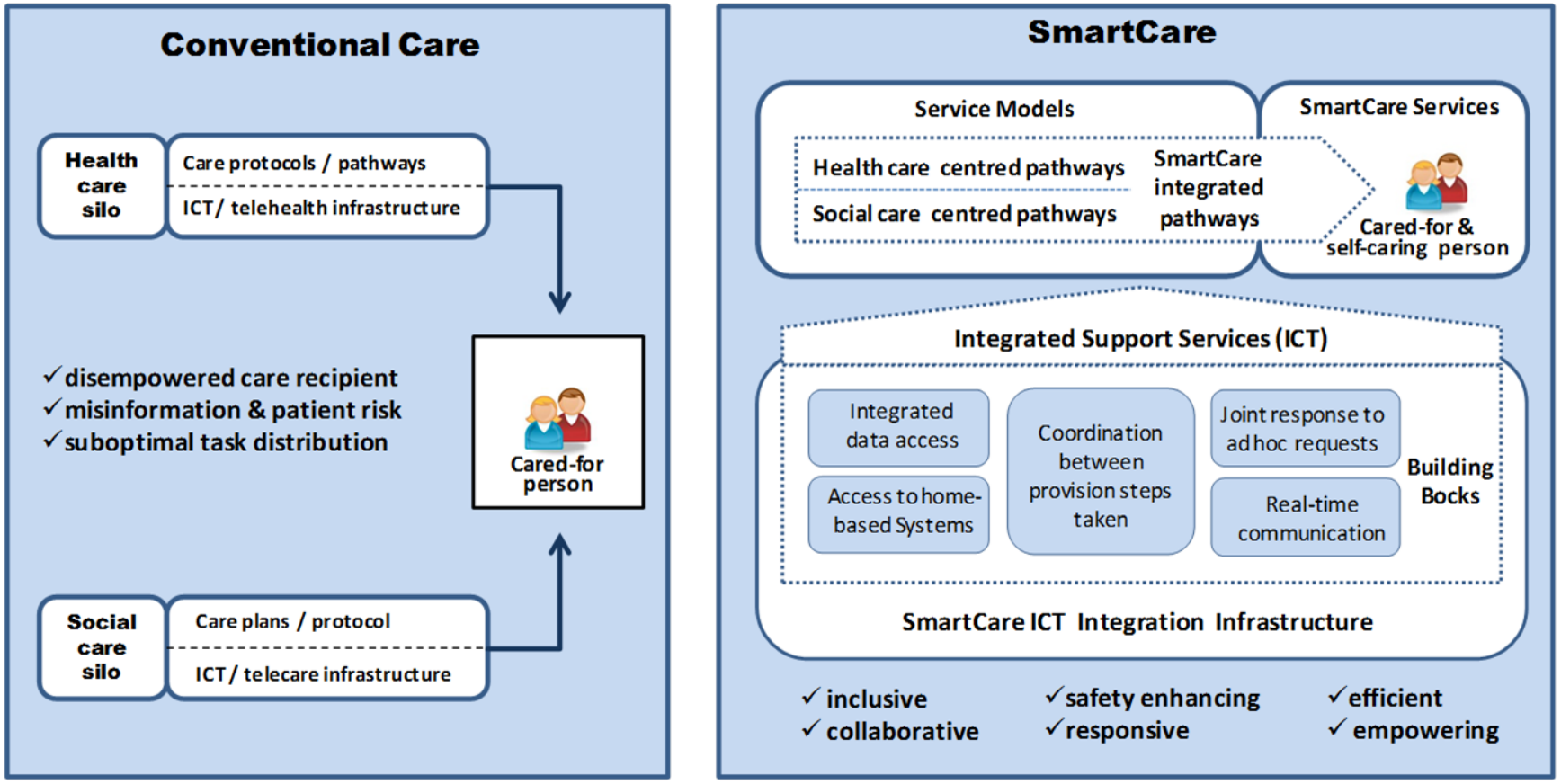




- Large scale commitment in 24 regions
- Pilot & validation in 2 waves in 10 European regions
- Multidimensional evidence on impacts
- Common evaluation approach
- Transferable to follower-regions across Europe
- Guidelines, specifications for procurement & implementation
- Plans for sustainable mainstream operation
- Large scale dissemination
- Links to EIP AHA & other EU/nat./regional initiatives

Service innovation:
Usual care vs Integrated care



Common SmartCare Support structure

- SmartCare coordination & management structure
- Expert advise & support (User Advisory Board, Industry Board, Committed Regions Board, Internal Scientific Board
- Local SmartCare Alliances / Stake Holder Partnerships

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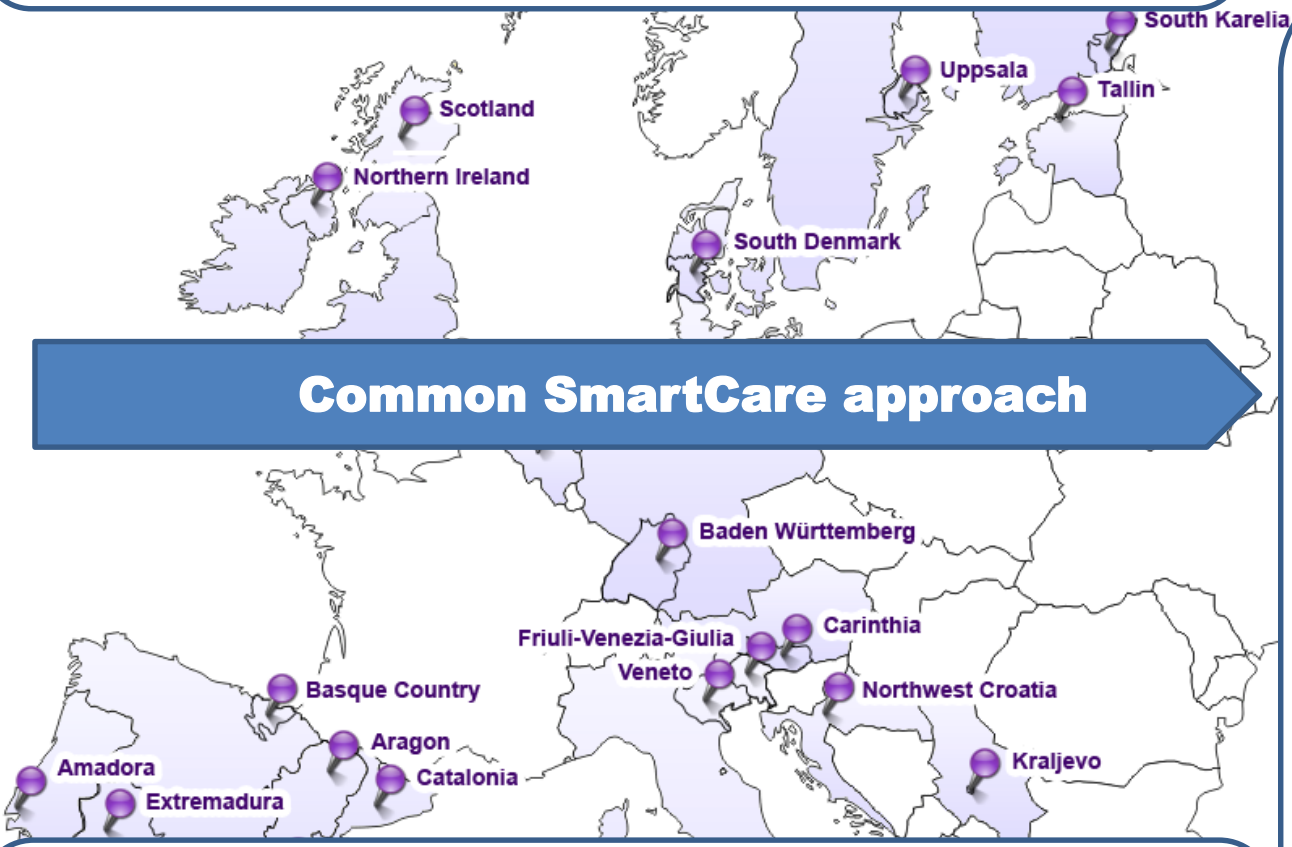

Common SmartCare approach

Shared outputs

- Integrated care **pathways, validated service models** & value chains
- Common **ICT integration infrastructure architecture**
- **Operational guidance:** guidelines for procurement, implementation & up scaling
- Synthesised **evidence** on impact
- **Sustainable business models & transferability assessment**
- **Consensus building on further organisational & policy** development
- **Contribution to EIPonAHA** by critical mass for large scale uptake

Common SmartCare work programme

- Requirements elicitation, use cases & integrated care pathways development
- Pilot service specification & process model development
- Joint definition of common building blocks for ICT integration infrastructure
- Pilot site preparation & operation in two waves
- Pilot evaluation & exploitation support

Integrated Care – supporting key functions through ICT

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- Care co-ordination
- Information sharing
- Joint, integrated assessment and care planning
- Support for self care and self management

SmartCare FVG deployment site

*Integrated care models implementing the **two pathways***

Integrated Care Pathway - Hospital Discharge

Integrated Care Pathway - Long Term Care

Primary Health Care environment

mainly for cardiovascular chronic diseases.

Local randomized study design

201 patients recruited

***101** in usual care control group*

***100** in "new ICT supported integrated care" intervention group*

SmartCare FVG deployment site

Enrolled Services:

Health care

Social care

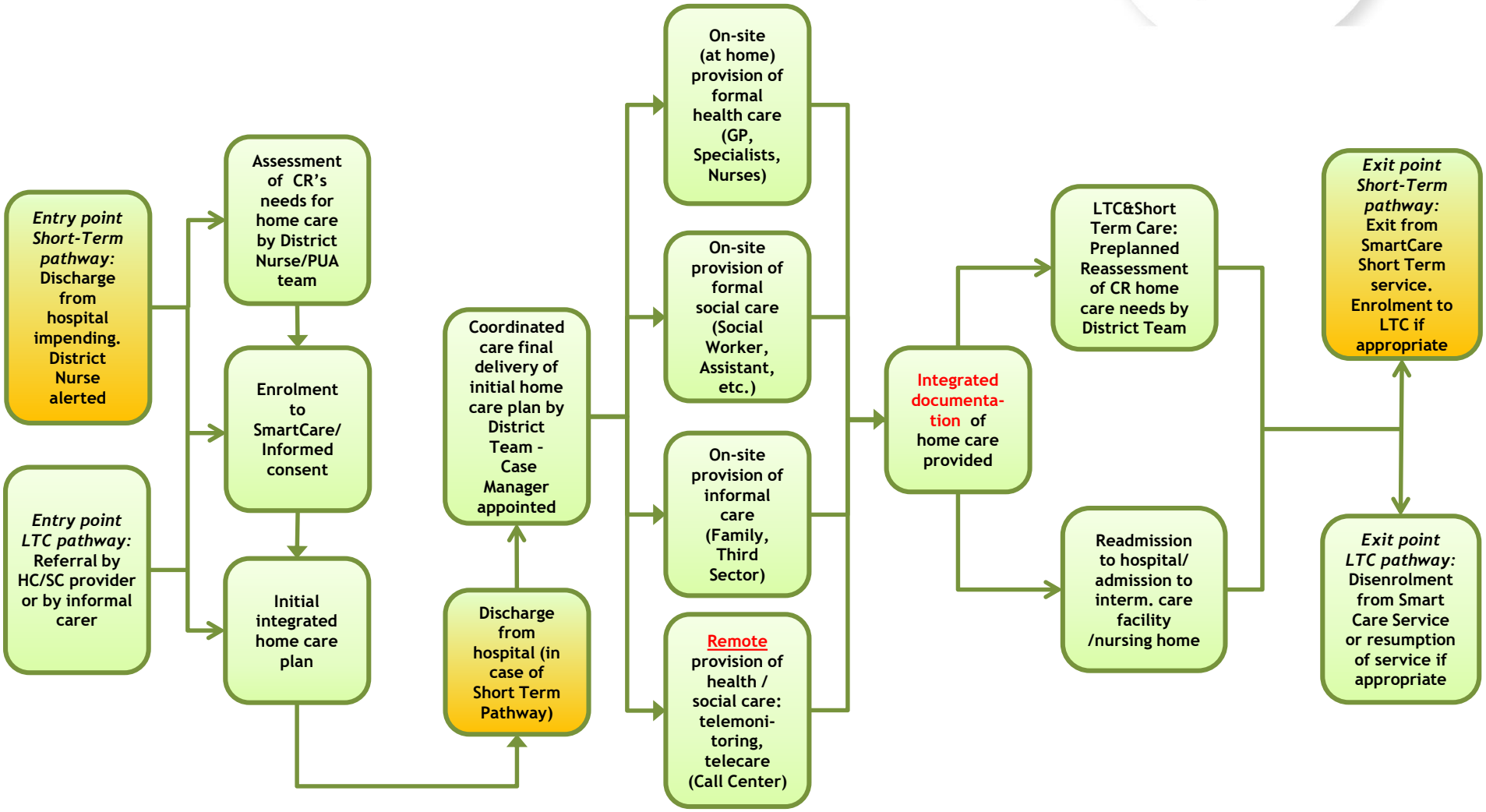
Third sector

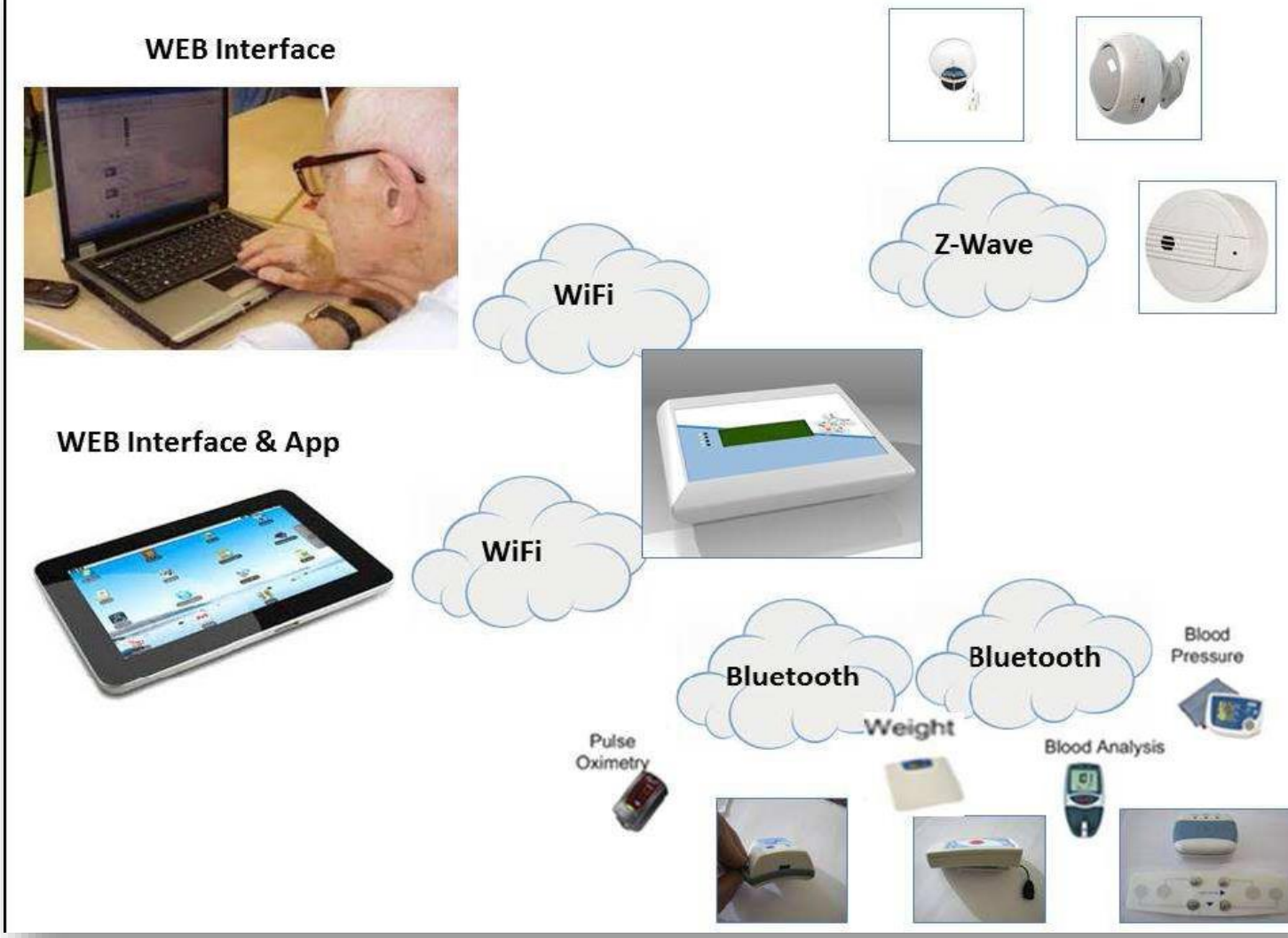
Informal care

Target population:

- Over 65
- Frailty Barthell index or BADL and/or timed up-and-go test (TUG)
- **Chronic diseases**: Heart failure and its comorbidities (Functional class NYHA II - IV), COPD, o diabetes mellitus

SmartCare Integrated Care Short Term - Long Term Pathways




WEB Interface
Z-Wave
WiFi
WEB Interface & App
WiFi
Bluetooth
Bluetooth
Blood Pressure
Weight
Blood Analysis
Pulse Oximetry

End users monitoring

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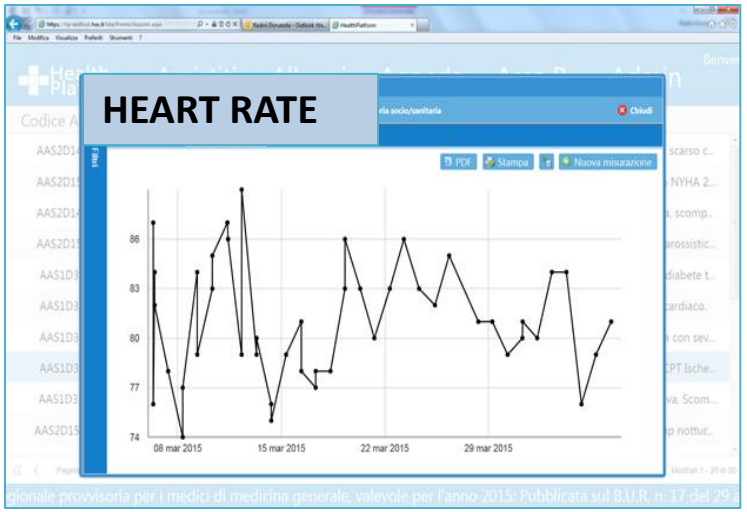
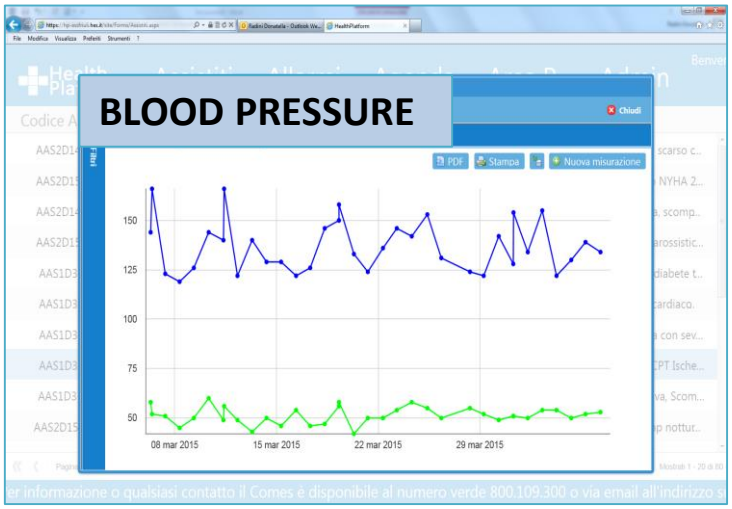
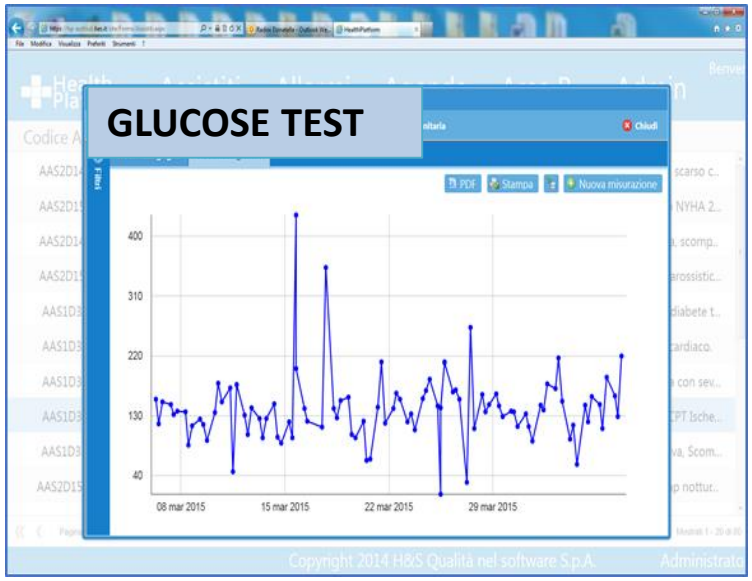


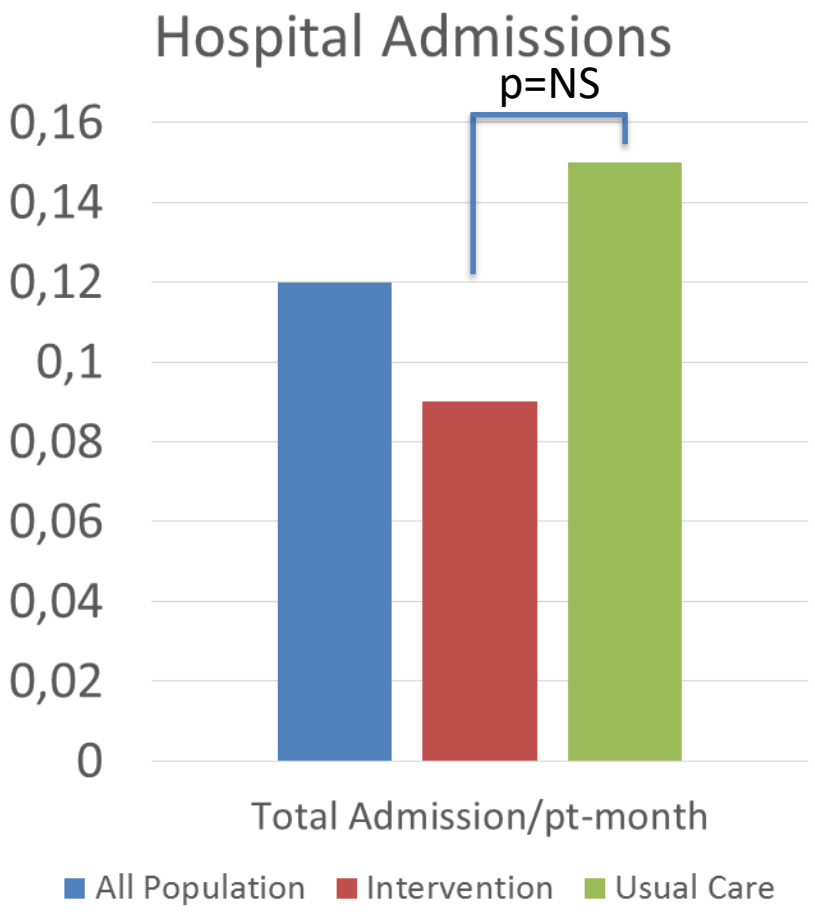


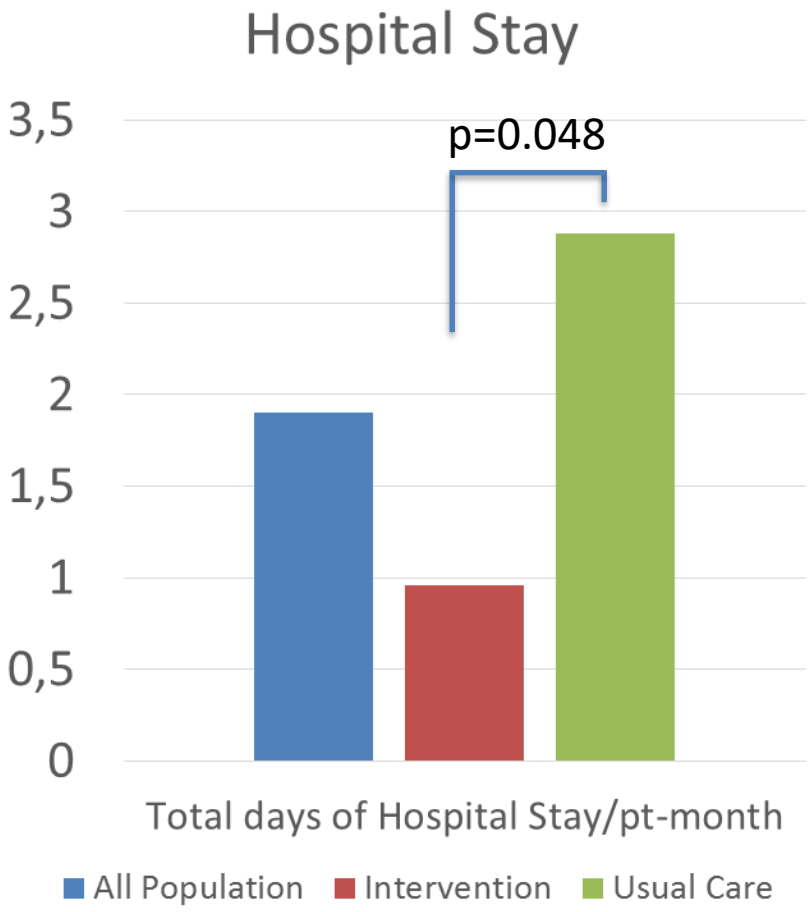


Results: Planned/Unplanned Contacts

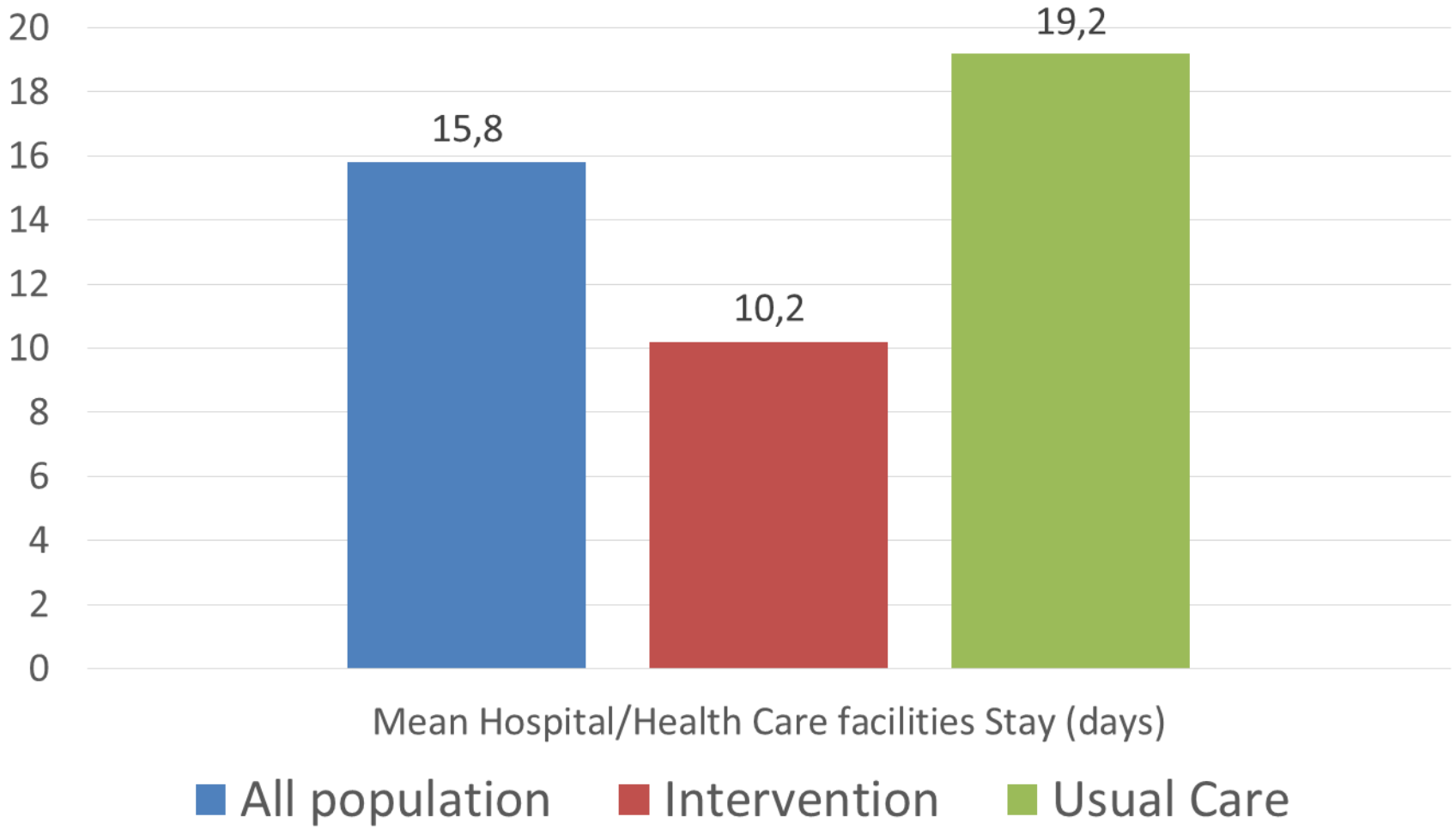
	All population (n=201)	Intervention (n=100)	Usual Care (n=101)	p=
Total contacts (home health care + phone call)	16.8±18.6	18.8±19.5	14.9±17.6	NS
Planned Home Health care	12.4±17.3	13.5±17.7	11.3±16.8	NS
Unplanned Home Health Care	0.9±3.4	1.8±4.7	0.03±0.3	<0.001
Planned Phone Call	1.6±2.7	1.8±2.9	1.4±2.5	NS
Unplanned Phone Call	1.9±4.9	1.7±3	2.1±6.1	NS

Short-term Post-discharge Pathway





Short-term Post-discharge Pathway



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Clinical and Organisational System Components

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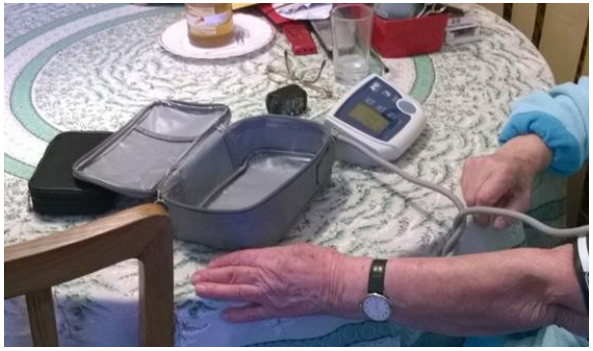
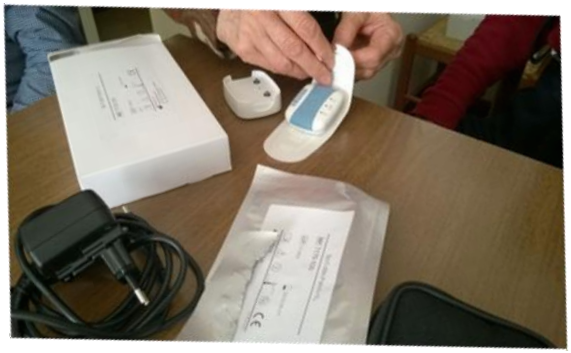
The whole system, both HW and SW, has **certified medical components** and the architecture is built in a way that **no data can be lost** or changed or simply checked by unauthorized access.

All **parameters**, clinical and environmental, can be **set as appropriate** at Hub level (at Care Recipient's home) to allow **multi parametric analyses**.





FVG - Results and general findings

- The whole FVG Health system involved 17 districts out of 20 with **great commitment of the Regional Government and Health Authorities**' managers
- **Monitoring** kept after the follow-up period and **still running**
- Clear positive results mainly on short term pathway in terms of **savings in hospital admissions and days of hospitalization**
- **Very good involvement of informal care givers**
- **Positive feedback from care recipients** on technology and solutions adopted

FVG - Results and general findings

- 201 randomized patients (100 Intervention vs 101 Usual)
- 19 early drop-out (12 Intervention vs 7 Usual care; 12 Short-term post-discharge vs 7 Long-term chronic)
- 182 patients followed (88 Intervention vs 94 Usual care)
- Follow-up 7.1 ± 3.8 months (119 patient-year):
  - Intervention vs Usual care: 6.7 ± 3.8 vs 7.4 ± 3.8 months;
  - Short-term post-discharge vs Long-term chronic: 4.1 ± 1.3 months vs 9.9 ± 3.3 months)

FVG - Results and general findings

- Events (16 deaths; 126 Hospital/Health Care facility admissions; 1758 days of stay)
  - 16 deceased patients (8.8%; 13.4 deaths/100 patient-year)
  - 108 Hospitalizations (1342 days of hospital stay)
  - 18 Intermediate Care/Nursing Home admission (416 days)

- Home Nursing Healthcare: 3053 total contacts (2.14 pt-month); 2417 (79.2%) Home Care (160 - 6.6%) unplanned; 536 (20.8%) Phone calls.

Results: Main clinical findings

	All population (n=201)	Intervention (n=100)	Usual Care (n=101)	p=
Age (years)	81±7.8	81.2±7.9	80.9±7.7	NS
Male gender (%)	53.8	60.2	47.9	NS
Heart Failure (1st Dx) (%)	79.1 (52.7)	76.1	81.9	NS
COPD (1st Dx) (%)	37.9 (17.6)	40.9	35.1	NS
Diabetes (1st Dx) (%)	68.1 (29.7)	64.8	71.3	NS
SBP/DBP (mmHg)	124/69	122/68	128/72	NS
HR (beats/min)	72.8	72.5	73.5	NS
Oxygen Saturation (%)	95.5±2.9	95.4±3	96.1±2.6	NS

Results: Social findings

	All population (n=201)	Intervention (n=100)	Usual Care (n=101)	p=	
Never married /Separated/ Divorced	13%	14%	12%	NS	Marital Status
Currently married	40%	36%	43%		
Widowed	39%	41%	36%		
Primary school	58%	57%	58%	NS	Education
Secondary school	22%	21%	23%		
High school/University	14%	14%	13%		
Alone, self-reliant	29%	22%	34%	NS	Social status
Alone, reliant on care	9%	10%	9%		
Lives in family/with carer, self-reliant	29%	32%	26%		
Lives in family/with carer, reliant on care	33%	36%	31%		

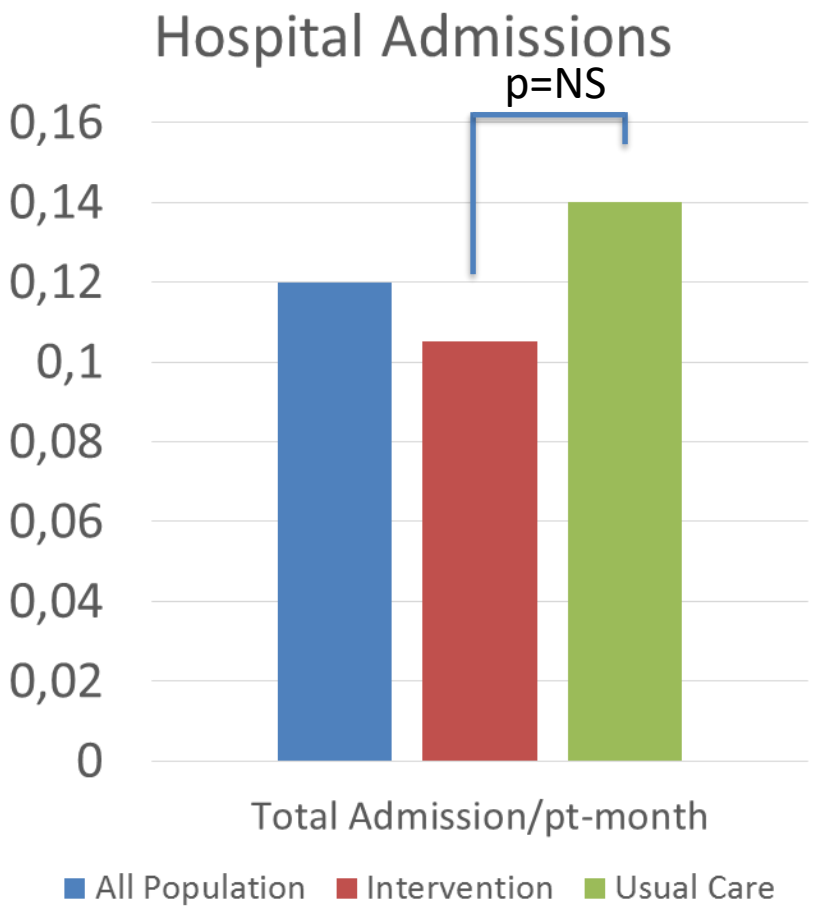
Results: Pathologies and treatment

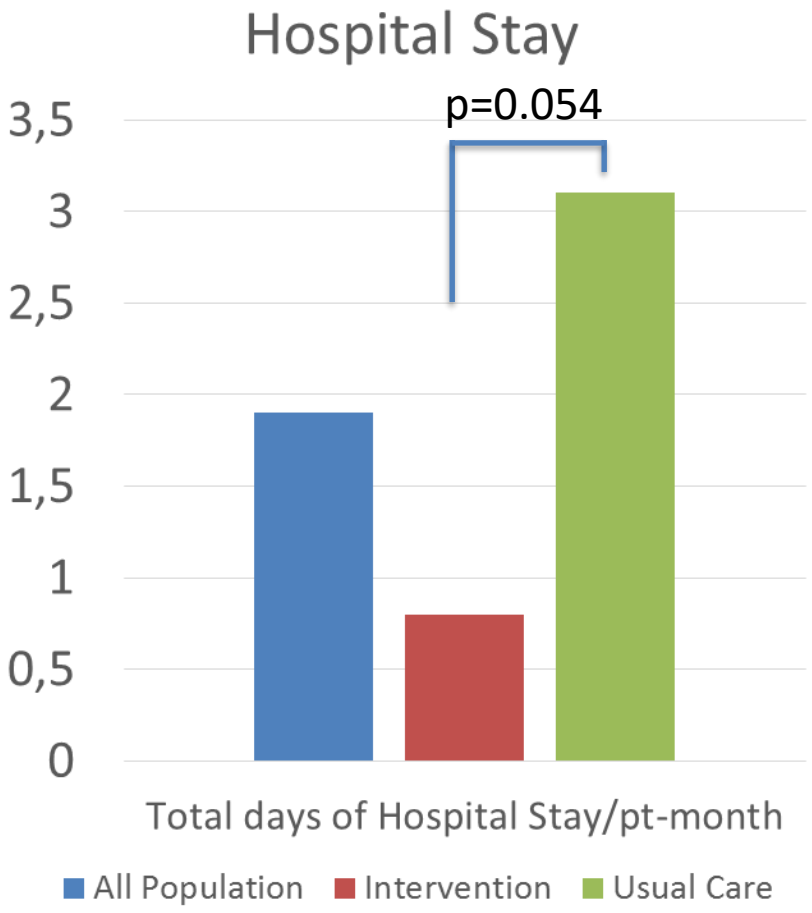
	All population (n=201)	Intervention (n=100)	Usual Care (n=101)	p=
Previous MI (%)	35	34.1	36.2	NS
Heart Disease (%)	96.7	95.5	97.9	NS
Pulmunary Disease (%)	63.7	65.9	61.7	NS
CKD (%)	28	28.4	27.7	NS
Vascular Disease (%)	30	28.4	30.9	NS
Charlson index ≥3 (%)	87.4	88.6	86.2	NS
Charlson index ≥5 (%)	44.5	48.2	40.4	NS
Prescription ≥7 Medications	58.2	60.2	56.4	NS

Results: Hospitalisations, Health Care facilities

	All population (n=201)	Intervention (n=100)	Usual Care (n=101)	p=
Hospital admission (n/pt)	0.59	0.55±0.8	0.64±1	NS
Hospital stay (days/pt)	7.37	5.83±10.8	8.8±19.3	NS
Intermediate Care admission (n/pt)	0.08	0.03	0.13	0.032
Intermediate Care Stay (day/pt)	1.68	0.83	2.48	NS
Nursing Home admission (n/pt)	0.01	0	0.02	NS
Nursing Home Stay (days/pt)	0.47	0	0.91	NS
Total Admissions/month (n/pt-month)	0.11±0.19	0.1±3	0.1	NS
Total Stay (days/pt-month)	1.64±4	1.24	2.02	NS

Short-term Post-discharge Pathway Heart Failure Patients





The SmartCare Mission

- **Improving co-ordination of care delivery** across established health and social services
- Developing and delivering integrated ICT-supported care services for older persons who have complex needs to facilitate:
- Enabling **person-centred, co-ordinated care** for individuals and their carers
- Improving **greater levels of self-care** and self-management
- Sharing a **unified approach** of the **health** and **social** care system
- Establishing effective and efficient communication between all parties
- Allowing a **better use of resources**, less duplication and more streamlined care

Clinical and Organisational System Components

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Health Platform (H&S)
is a centralized platform, structured and focused on:

- Care recipient management;
- Health Care / Social Care / Informal **Care management**;
- Care Recipient and Health/Social/Informal care **integrated agenda management**;
- **Data collection** (clinical and environmental), both automatically and manually through the availabile interface applications and questionnaires.

The Platform has three main **components**:

1. **Central system** (cloud);
2. The **Hub** and the **medical devices** at Care Recipient's home;
3. **Devices for the Health Care staff** for monitoring and screening activities.